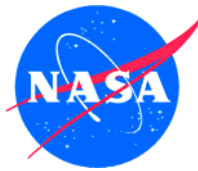


Model 999HA Space Traveling-Wave Tube (TWT)

L-3 Communications Electron Technologies, Inc. (L-3 ETI)



TECHNOLOGY

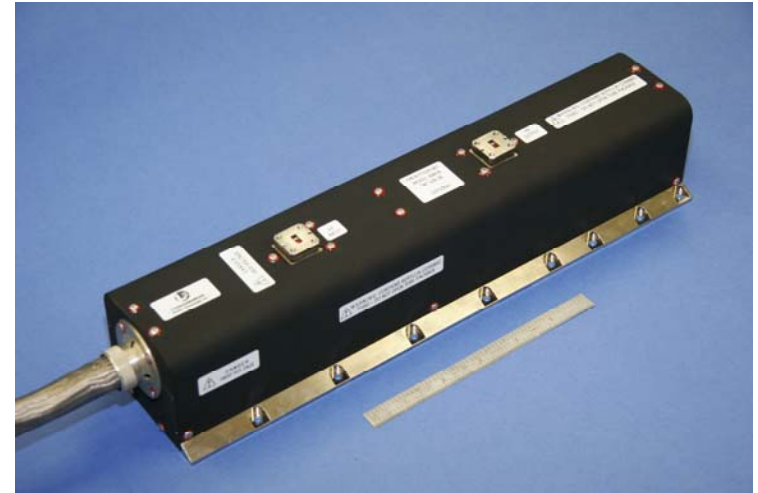
The 999HA Model TWT from L-3 ETI is a high power, high-efficiency, microwave transmission source space Traveling-Wave Tube that will provide high-rate communications for science data and video from future deep space planetary orbiters.

COMMERCIAL APPLICATION

L-3 ETI, located in Torrance, CA, is a leading provider of high reliability products to space and defense customers. To date, L-3 ETI's 999HA Model is the highest power Ka-band space TWT ever manufactured and tested. TWTs are appealing for deep-space application because they are radiation tolerant and their power and efficiency levels are significantly higher than those of solid-state amplifiers. This new TWT weighs only 1.5kg, but it is 7 times more powerful than the previous highest power Ka-band space TWT. Also, it is over 20 times more powerful than the Cassini TWT, which has been orbiting Saturn since July 2004. This increase in power capability directly translates into higher data transmission rates from greater distances, more flexibility, and more channels available for space communications.

SOCIAL / ECONOMIC BENEFIT

- ◆ The new TWT enables an output power increase of 75% over the previous generation Ka-band space TWT and a mass reduction of 35% while also reducing cost.
- ◆ The wide frequency bandwidth capability provides flexibility for different mission requirements.



***L-3 ETI Model 999HA
Traveling-Wave Tube***

NASA APPLICATIONS

The 999HA TWT from L-3 ETI is a high-power, high-efficiency microwave transmission source that will enable high data-rate transmission to Earth for science data and video from future missions to the outer planets of our solar system.

Descendants of L-3 ETI's 999HA TWT will be used for high data rate transmission for the Kepler and Lunar Reconnaissance Orbiter missions.

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Date of Technology: 2005